Original Article

The Greek Resistance to Change Scale: A Further Validation

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Abstract

Background: An organization has to keep up with ongoing changes in order to survive and evolve. Resistance coming from employees is considered to be one of the greatest obstacles for a successful change management. A tool able to measure the characteristic of resistance can act as a catalyst for the implementation of new conditions. The Resistance to Change (RTC) Scale can be such an instrument, as it can evaluate who might resist a change and for what reasons.
Objective: The study aimed to examine the validity and reliability of the Resistance to Change (RTC) Scale for assessing resistance to change within a Greek context.
Methodology: Data were collected from 600 under- and post-graduate students of three different Greek Institutions. The convergent validity of the scale was examined with a battery of self-reported, validated into Greek language, questionnaires: the Self-Esteem (SES), the General Self-Efficacy (GSES), the Multidimensional Locus of Control (IPC LOC), and the International Personality Item Pool (IPIP). Internal consistency and construct validity were also examined.
Results: Cronbach's alpha coefficient for the overall scale, as well as for the four factors respectively, were found satisfactory. Factor analysis verified the scale's initial structure of the four factors, each reflecting a subscale (Routine seeking, Emotional reaction, Short-term focus, Cognitive rigidity), and that of the first-order factors loading into a second-order one, and combined forming a composite RTC score. The interclass correlations showed statistically significant results.
Conclusions: This study assessed the psychometric properties of the Greek version of the RTC scale. Overall, results indicate that the Greek version of the RTC scale is a valid and reliable tool for assessing the trait of resistance to change in the Greek population.

Key words: change management, dispositional resistance to change, trait, cross-cultural validation, psychometrics

Introduction

Today's era is characterized by a ceaseless alteration of circumstances, a fact that is inevitably linked to the notion of change. Concepts such as survival, development, and success of goals for organizations are inseparable to the phenomenon of change (Kotter & Schlesinger, 1979; Beer & Nohria, 2000). In many cases, the resistance that employees raise against the upcoming changes is among the main reasons that organizational changes fail (Kotter, 1995; Georgalis et al., 2014). Resistance to change can cause a great deal of damage to an organization's plans, let alone considering that 70% of the intended changes usually fail (Beer & Nohria, 2000; Kotter, 2008; Georgalis et al.,

2014). Therefore, an effective change management is considered essential.

The resistance could reasonably be expected to be in a direct proportion to the difficulty and innovation of a change. Nevertheless, this is far from the truth. Actually, change has both a technical and a social side. The technical relates to procedures. The social refers to personal relationships and how they are formed. The variable that determines resistance the most is the social one (Lawrence, 1969). To this day, there is no explicit perception of the phenomenon of resistance to change. According to some, resistance is the fear of losing the *status quo* (Kotter & Schlesinger, 1979); for some, it is a reaction of dissatisfaction towards administration (Folger & Skarlicki, 1999) or the force that brings balance (Dent & Goldberg, 1999); while to others, it is the result of a lack of participation (Lines, 2004).

Background

Resistance to change has been defined as "a tridimensional (negative) attitude towards change, which includes affective, behavioural, and cognitive components" (Oreg, 2006, p. 74). Before Oreg, researchers claimed that resistance was an attitude, an occasional phenomenon, a mixture of opinions and feelings (Coch & French, 1948; Lawrence, 1969; Miller, Johnson & Grau, 1994; Dent & Goldberg, 1999; Armenakis & Bedeian, 1999; Ford, Ford & McNamara, 2002). At time, scholars used to study resistance within the meaning of other traits, within the context of measures designed for other purposes; e.g. the need for achievement (Miller, Johnson & Grau, 1994). Therefore, resistance was studied indirectly. Contemporary studies (Piderit, 2000; Bovey & Hede, 2001; Stanley, Meyer & Topolnytsky, 2005; Oreg et al., 2009; Lamm & Gordon, 2010; Thomas & Hardy, 2011; Georgalis et al., 2014) address resistance to change as a concept of multidimensional human behavior. Based on Piderit's theory of resistance to organisational change being a three-dimensional ambivalent attitude, Oreg developed and validated the Resistance to Change (RTC) Scale; a scale "designed to tap an individual's tendency to resist or avoid making changes, to devalue change generally, and to find change aversive across diverse contexts and types of change" (Oreg, 2003, p. 680). Additionally, Oreg showed (2003, p. 683) that RTC has a dispositional character.

The RTC scale contains of 17 items which are divided into four subscales, four independent but related factors; routine seeking: the degree to which people tend to enjoy their routine and remain attached to it; emotional reaction: feelings, such as anxiety and discomfort, provoked by the imposed change; short-term focus: the degree to which people tend to be indifferent for the long-term benefits of change and instead focus only on the short-term ones; cognitive rigidity: finding difficult in general to consider another point of view; represents the extend of closed-mind and stubbornness. The scale provides four subscale scores in addition to an overall score, which evaluates the dispositional resistance to change. Later on, the theory was further refined in studies (Oreg, 2006; van Dam, Oreg & Schyns, 2008; Lamm & Gordon, 2010; Michel, Todnem By & Burnes, 2013) supporting resistance to change being an "alloy". In this case, researchers demonstrated that resistance is associated with individuals' different perspective along with specific conditions at time. What is more, resistance to change is a global phenomenon and as such it is logical to be influenced by cultural features. Due to this, Oreg with co-researchers from seventeen countries (Oreg et al., 2008) confirmed the cross-national validity of the scale. Noteworthy, the RTC scale has been used as a reliable research tool in studies of various scientific disciplines, e.g. military (Campbell, 2006), school environments (Oreg & Berson, 2009; Battistelli, Montani & Odoardi, 2013), healthcare (Carlström & Ekman, 2012; Johansson et al., 2014), sales profession (Mulki et al., 2012), digital technologies (Nov & Ye, 2008), education (Paloş & Gunaru, 2017).

Aim of the study

Resistance to change is a global phenomenon, and as such it is only reasonable to be influenced by cultural elements. The RTC scale has been pilot studied in Greek before (Oreg et al., 2008). Nonetheless, the authors themselves are encouraging for a continuous assessment. This urge was the initial stimulus for this study. In literature two more relevant studies can be found; one regarding a Spanish context (Arciniega & González, 2009) and one regarding a post-Soviet one (Stewart et al., 2009).

The continuous assessment of a scale's psychometric properties is an argument that comes in line with the "Standards for

Educational and Psychological Testing" of the American Educational Research Association (APA, AERA, NCME, 2014). These standards highlight that validity and reliability are evidences supporting the interpretation and use of test scores, and have to be provided for each intended use. What is more, equivalence across culture cannot be taken for granted, as societies evolve and mutate. Therefore, reactions may change over the years. In fact, economic crisis affecting Greek territory over the last years resulted in tremendous changes which, eventually, brought forward new economic and social conditions.

As Streiner, Norman and Cairney state respectively (2015, p. 237) the cross-cultural validation is an ongoing process on which many types of evidence can be brought to bear. Simply put, a questionnaire can hardly be validated once and for all. In alliance with all those mentioned above, the aim of the present study was to further examine the validity and reliability of the RTC scale score in a present-day Greek sample.

Methodology

Design and sample: This study investigates the psychometric properties of the RTC scale. Therefore, a series of well-established trait variables (i.e. self-esteem, self-efficacy, locus of control, big-five personality characteristics) were selected in order to be examined in relation to resistance to change, as theory (Oreg, 2003) conceptualizes resistance to change being positive correlated with conservative values and negative correlated with openness values. A cross-sectional and correlational study was conducted in a sample consisted of 600 under- and post-graduate students, studying in two Universities and one Technological Institute located in Greece. The sample selection procedure chosen was convenience sampling. Data were collected from May to July 2017. The questionnaires were distributed to the students by the main investigator and finally 520 fully completed questionnaires were returned to her (response rate = 86.7%).

Measures: The Resistance to Change Scale (RTC; Oreg, 2003) is an anonymous, self-administered scale consisted of 17 closed-ended questions and four subscales (Routine seeking, Emotional reaction, Short-term focus, Cognitive rigidity). Participants respond through a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The questionnaire has been translated into Greek from Professor M. Vakola during a study of measurement equivalence conducted across 17 nations (Oreg et al. 2008). The Self-Esteem Scale (RSES; Rosenberg, 1965) was used to evaluate general feelings of self-acceptance and self-worth, as it is considered to be one of the most well-validated measures of global self-esteem. It is a one-dimensioned tool, consisted of ten closed-ended questions, five positive and five negative classified statements. Participants answer through a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). The questionnaire has been translated into several languages. Greek validation (Galanou et al., 2014) showed satisfactory reliability and validity. With the General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995) we assessed the perceived self-efficacy by the individual himself. GSES is a one-dimensioned tool consisted of ten closed-ended questions, answered with a 4-point Likert scale ranging from 1 (not at all true) to 4 (exactly true). The psychometric properties of the scale have been tested in 33 countries, including Greece (Glynou, Schwarzer & Jerusalem, 1994). The Multidimensional Locus of Control IPC Scale (IPC LOC Scale; Levenson, 1973) is composed of 24 items forming three subscales (Internal, Powerful others and Chance). The scale examines the extent to which someone believes that his life is controlled by himself or by an external factor. Participants declare their opinion through a 6-point Likert scale ranging from -3 (strongly disagree) to +3 (strongly agree). The scale has been translated and found reliable in many countries. The psychometric properties of the Greek version (Kourmousi, Xythali & Koutras, 2015) were found satisfactory. The Big Five traits were assessed using the International Personality Item Pool (IPIP; Goldberg et al., 2006). The Greek validated scale (Ypofanti et al., 2015) consists of 50 questions and evaluates five factors (Extraversion, Agreeableness, Conscientiousness, Emotional stability, Intellect). Answers are given through a 5-point Likert scale ranging from 1 (disagree) to 5 (agree). Each factor may receive positive or negative score at the end. Control variables were assessed with questions about demographic, topographic, work, and educational data that were requested. All internal consistencies of the scales assessed are presented in Table 2.

Research ethics: The present study was conducted in accordance with an approved research protocol by the University, did not violate in any way any human rights and did not interfere with ethical issues. All the regulations for research have been respected. A permission was granted from each Institutions' Ethics Committee. All participants provided written informed consent prior to their participation. There were no potential risks for the participants. The Institutions were not burdened financially. Questionnaires were completed individually, anonymously and voluntarily. All responses were kept confidential.

Statistical analysis: Using IBM SPSS 22 and AMOS 20 a series of factor analyses were conducted in order to assess the construct validity of the instrument. Exploratory factor analysis (EFA) was used to identify the underlying interdependence relationships among measured variables, i.e. factors. In order to verify some assumptions, sample's adequacy was checked with Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy as well as with the values of the main diagonal of the anti-image correlation matrix. Whether the relationships of the criteria differed from randomness was examined with Bartlett's globality test. According to theory (Oreg, 2003), the scale consists of four factors which form parts of an overall score; therefore, provides a total RTC score as well as four subscale scores. On this ground, a confirmatory factor analysis (CFA) using maximum likelihood (ML) estimation procedures was initially computed, in order to test a model of four first-order factors. Subsequently, another CFA followed in order to test a model of the four first-order factors loading on a second-order factor. The emerged models were examined with multiple goodness-of-fit indexes, including the absolute and relative fit indexes of good adaptation, as well as the parsimonious indices. (Harrington, 2009; Tabachnick & Fidell, 2013). The reliability of the factors as well as of the model as a whole, in terms of internal consistency, was evaluated with Cronbach's alpha coefficient, item-item correlations and item-total correlations. The extent to which responses on the instrument exhibit a strong relationship with responses on conceptually similar tests or instruments, i.e. convergent validity (APA Dictionary of Psychology, 2007), was tested by calculating Pearson's correlations coefficients between scales, i.e. the RTC scale with SES, GSES, IPC LOC and IPIP respectively.

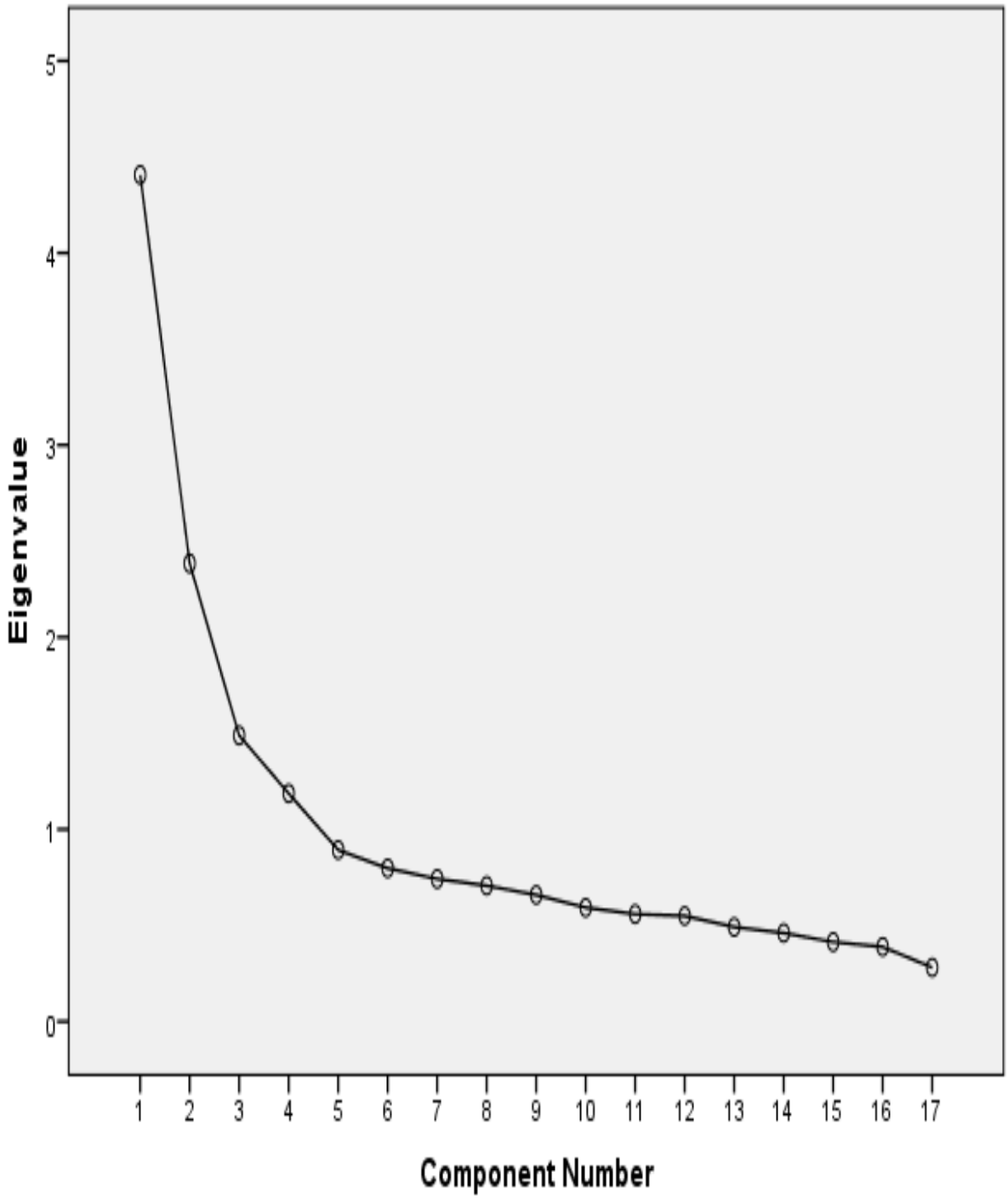
Results

77.4% of the sample were female. Participants' age ranged from 19 to 57 years (M= 24.56, SD=7.37). The majority (72.7%) were studying Nursing. Demographic and professional characteristics of the participants are thoroughly presented in Table 1. The sample was considered sufficient for analyzing main components. The KMO measure applied resulted in the value of .83, indicating that the collected data were suitable for further analysis. The anti-image correlation table presented main diagonal values from .66 to .92, thus also considered satisfactory. In addition, Bartlett's test was statistically significant (2444.75, df=136, p<.001); therefore, the relationship between criteria showed a difference from randomness. The conducted EFA (promax rotation) showed a factor structure with four principal dimensions (eigenvalues >1; 4.41, 2.38, 1.49, 1.19), confirming the original scale. The extraction of four factors is also confirmed by the point at which the curve's inclination changes to the scree plot, as presented in Figure 1. The four factors accounted for 55.69% of total variance explained.

The conducted CFA followed the recommendation: $\chi^2/df<3$ (Bollen, 1989); CFI≥0.90 (Kline, 2010) or CFI between ranges .90-.95 (Bentler, 1990), which is also considered acceptable; GFI≥0.90, RMSEA≤.08, PNFI>.50, PCFI>.50 (Meyers, Gamst & Guarino, 2006). The results showed that the four-factors scale model presented very good fit: $\chi^2=335.56$, p<.001, df=113, $\chi^2/df=2.97$, RMSEA=.062 (90% CI of RMSEA=.054-.069), GFI=.93, CFI=.91, IFI=.91, SRMR=.057, PNFI=.72, PCFI=.75. Standardized regression weights ranged from 0.44 to 0.87 as shown in Figure 2. The generally accepted loadings threshold is set at 0.40 (Hu & Bentler; 1999). Correlations between factors varied from 0.13 to 0.67.

Another conducted CFA confirmed the second-order scale, i.e. a model of the four first-order factors loading on a second-order factor: $\chi^2=342$, df=115 p<.001, $\chi^2/df=2.97$, RMSEA=.062, (90% CI of RMSEA=.054-.069), GFI=.93, CFI=.90, IFI=.90, SRMR=.059. Each of the first order factors showed a high correlation with the second-order factor ranging from 0.69 to 0.91, as shown in Figure 3, except for the cognitive rigidity factor.

Figure 1. Scree plot of eigenvalues from the exploratory factor analysis



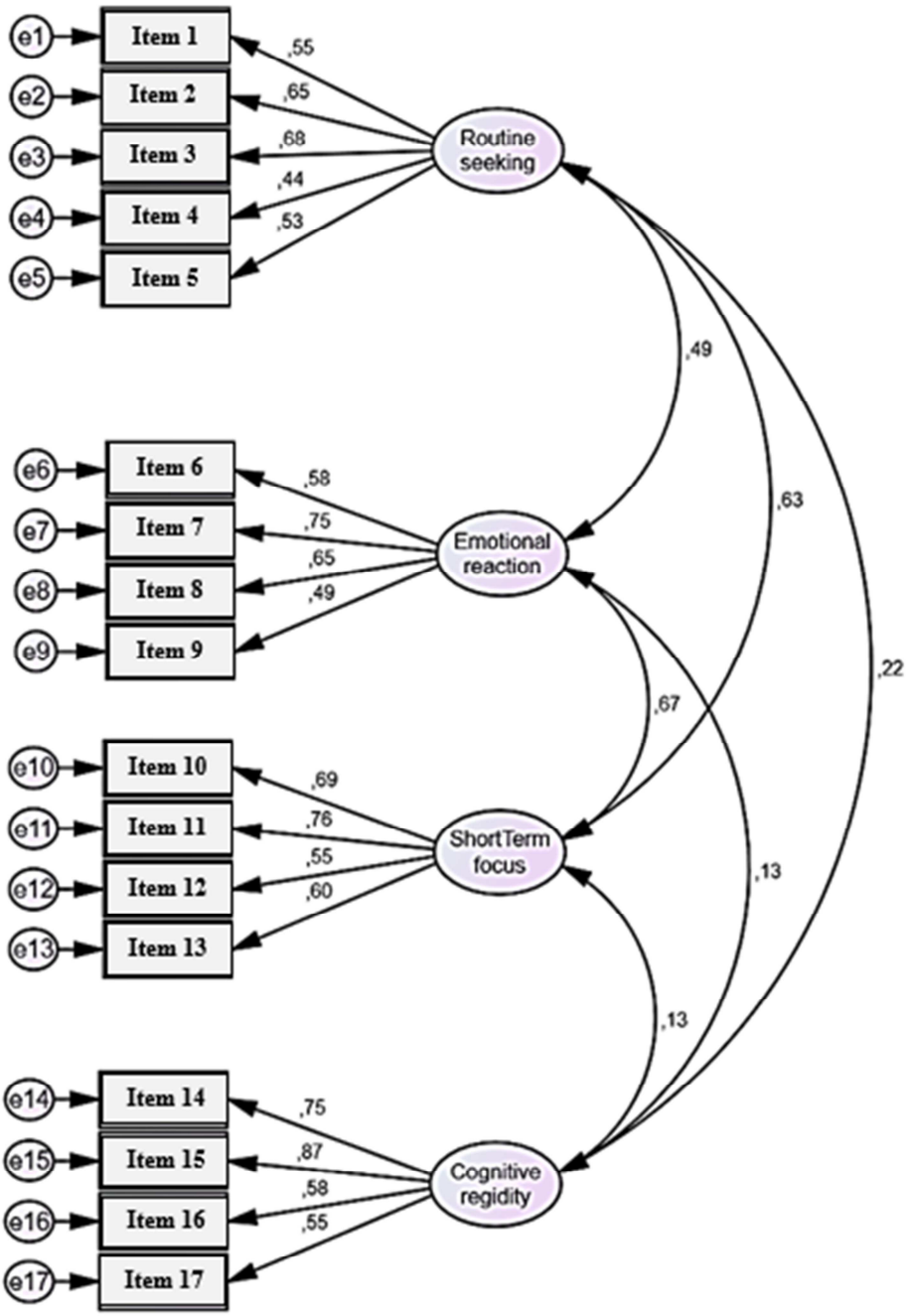


Figure 2. Standardized estimates of the 17 items of the Resistance to Change scale according to the Confirmatory Factor Analysis.

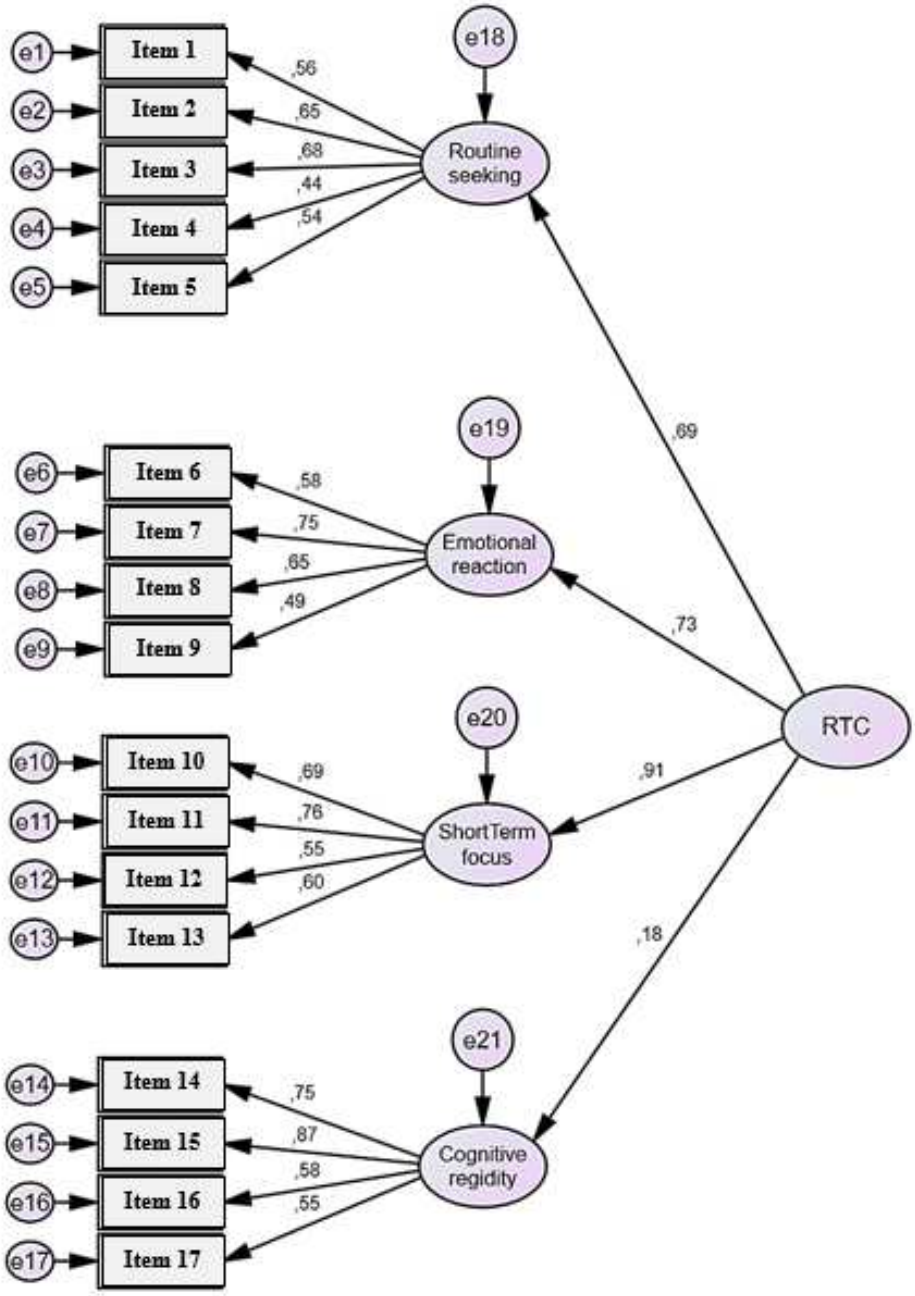


Figure 3. Standardized estimates of the 17 items of the Resistance to Change scale as a second-order factor according to the Confirmatory Factor Analysis.

Table 1. Demographic and professional characteristics of the sample

CHARACTERISTIC		*f*	%
Gender	Men	117	22.6
	Women	400	77.4
Age (years)	18-23	358	70.6
	24-29	67	13.2
	30-35	22	4.3
	36-41	15	3.0
	>42	26	5.1
Residence	Rural	143	27.8
	Urban	372	72.2
Marital status	Unmarried	431	84.2
	Married	43	8.4
	Cohabited	32	6.3
	Divorced	6	1.2
Children	0	425	89.5
	1	5	1.1
	2	34	7.2
	3	7	1.5
	>4	4	0.8
Employment status	Employees in public sector	73	16.1
	Employees in private sector	65	14.3
	Self-employed	18	4.0
	Unemployed	297	65.6
Level of studies	University	281	65.7
	Technological Institute	85	19.9
	Postgraduate (MSc)	60	14
	Doctoral degree (PhD)	2	0.5
Department of studies	Nursing, University of Peloponnese	186	35.8
	Sport Organization and Management, University of Peloponnese	19	3.7
	Nursing, National and Kapodistrian University of Athens	134	25.8
	Agriculture, Technological Institute of Peloponnese	85	16.3
	Nursing, Post-graduate, National and Kapodistrian University of Athens	58	11.2
	Financial, Post-graduate, Technological Institute of Peloponnese	38	7.3

The values for internal consistency of the RTC scale as a whole as well as of the subscales, as measured by Cronbach's alpha coefficient, were found satisfactory. The alpha coefficient for the full RTC scale was .80, when for the subscales ranged from .70 to .79. All Cronbach's alpha coefficients are thoroughly presented in Table 2.

Correlations among the personality measures were assessed. Pearson's correlations coefficients between the overall RTC scale and the four subscales were found positive, ranging from .54 to .74. Respectively, intercorrelations of subscales showed positive values ranging from .09 to .52. Correlations between RTC and RTC subscales with SES, RSES, LOC and IPIP scales showed low to moderate significant relationships. All intercorrelations are thoroughly presented in Table 2.

Discussion

This study examined the reliability and validity of the RTC scale in a Greek sample. The questionnaire's internal consistency was found satisfactory for the overall scale as well as for each of the four factors. What is more, the structural validity and the convergent validity of the scale were verified. The results provide adequate support that the RTC scale is a useful and valid instrument to use in a Greek context.

To begin with, all Cronbach's alphas were over the widely accepted limit of .70 (Nunnally & Bernstein, 1994), while the overall Cronbach's alpha of the scale was 0.80. These results are consistent with the ones reported on other studies (e.g. Campbell, 2006; Lamm & Gordon, 2010; Carlström & Ekman, 2012; Michel, Todnem By & Burnes, 2013; Paloş & Gunaru, 2017).

The exploratory factor analysis revealed a good structure of the four principal dimensions, i.e. the four factors: routine seeking, emotional reaction, short-term focus, cognitive rigidity. The confirmatory factor analysis that followed revealed, as indicated by the fit indices, a good fit to the empirical data both for the four-factor scale model (thus confirmed that all items loaded significantly on their respective factors), as well as for the first-order factors loading to a second-order factor (thus validated the trait of general disposition to resist change); therefore scale's measurement equivalence was established. An exception was observed in the cognitive rigidity factor, a finding that is also encountered into other studies, e.g. in 3 of the 17 countries (Slovakia, Greece and the United Kingdom) of the cross-cultural study (Oreg et al., 2008). These results, which provide adequate evidence for the structure validity of the scale, come in line with the ones reported on other studies (Oreg et al., 2008; Arciniega & González, 2009). Contrariwise, Stewart et al. (2009) concluded that the four-factor model was no good fit.

With regard to the results revealed from the Pearson's correlation coefficients, significant intercorrelations were found among the four subscales, as expected. The highest correlations were encountered among emotional reaction and short-term focus subscales, and the lowest between cognitive rigidity and the other three subscales; just as Oreg (2003) found and Arciniega & González (2009) confirmed. These high intercorrelations should not be overlooked, as they indicate the existence of a general tendency to resistance change, i.e. the trait of dispositional resistance to change. Moreover, correlations between the RTC and the measures used to verify some aspects of convergent validity, i.e. RSES, GSE, IPC LOC and IPIP, showed that the relationships between the investigated variables were found in the right direction and with weak, yet meaningful, significance.

The theoretical conceptualization of resistance to change being positive correlated with conservative values and negative correlated with openness values was confirmed. In particular, the relationships between the resistance and these measures indicated, among others, that people with high self-esteem and high self-efficacy are less likely to have a disposition towards resistance to change. On the other hand, people who are less stable emotionally, less cultured, more introspective, or less affable are more likely to always have the tendency to resist change. Furthermore, people who are emotionally stable are less likely to experience stress and discomfort from an imposed change. Also, people with intellectual growth tend to be interested in the long-term benefits which may arise from an imposed change and are more likely to seek a change in order to get out of their routine. The variations observed in intercorrelations among RTC subscales and personality traits that share a similar conceptual framework advocate of the need for discrimination among the scale's four factors.

While the results offer several implications, it is assumed that certain methodological limitations that are a part of most organizational and behavioral research should be taken into account. Authors of self-report surveys in today's research are expected to report on Common Method Variance (CMV, i.e. variance that is attributed to the measurement method rather than the constructs of interest), as it raises red flags regarding potential artificially inflated relationships among variables (Podsakoff et al., 2003). On this ground, ex ante (during the experiment's design) and ex post (post hoc statistical tests) approaches were carried out in an attempted to mitigate common method bias. During survey's design, a composition of scales holding different anchors was chosen in order to knock out the risk for systematic influence of responses coming from a reduced cognitive effort for the respondent due to an overuse of similar Likert scale response anchors (Podsakoff et al., 2003). For example, resistance was evaluated on a Likert scale from 1 (strongly disagree) to 6 (strongly agree), but self-esteem used a reversed scale, i.e. from 1 (strongly agree) to 4 (strongly disagree), and locus of control did not even used a Likert form; instead it required a declaration of agreement or disagreement on a range of +3 (if you agree strongly) to -3 (if you disagree strongly). Moreover, a post-hoc analysis was conducted, a Harman's single-factor test. All 111 variables were entered into an exploratory factor analysis. If a substantial amount of CMV is present, either a single factor will emerge, or one general factor will lead to the majority of the covariance among the measures (Podsakoff et al., 2003). The unrotated principal components factor analysis revealed 30 distinct factors with eigenvalue greater than 1.0, rather than a single factor. The 30 factors together accounted for almost 66.1% of the total variance. Moreover, the first factor accounted for only 11.47% of the total variance, which is not the majority. Therefore, the factor analysis suggested that common method bias was not present.

Conclusions and implications for practice

Everything around us changes. In order to benefit from changes, what matters the most is to understand the phenomenon of change and adapt accordingly. Undoubtedly, whoever is interested in assessing the phenomenon of resistance to change, either researcher, or teacher, or student, let alone a manager, must never forget that individuals differ. This must not be taken lightly. Personality traits impose a need for personalized assessment.

Dispositional resistance to change is a trait which can be used as a tool for revealing what needs to be done. Characteristics such as open mind, readiness for trying something new, love for surprises, flexibility and adaptability offer a great advantage when it comes to change management. Based on foresight, nothing is certain. Instead, a reliable tool, efficient at recognizing all that mentioned above, as well as their opposites, may contribute to possibilities flourishing.

The findings of this research supported the validity and the reliability of the RTC scale in a present-to-day Greek context. Therefore, the results show that the RTC scale can be a useful tool for the assessment of the dispositional resistance to change and contribute to the literature of the RTC being a useful tool for managing organizational change.

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Table 2. Internal consistencies, means, standard deviations and intercorrelation matrix for the key variables

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	*Means*	SD	*Cronbach's a*
1	Self-Esteem	-															2.1	0.43	.81
2	Self-Efficacy	.42	-														2.9	0.39	.79
3	Internal_LOC	-.31	-.31	-													2.5	0.48	.56
4	Powerful Others_LOC	.24	.12[b]	~~.04~~	-												3.6	0.58	.72
5	Chance_LOC	.25	.10[a]	.09[a]	-.53	-											3.3	0.52	.61
6	Consientiousness_IPIP	.18	.17	.13[b]	-.12[b]	-.10[a]	-										3.71	0.83	.89
7	Emotional Stability_IPIP	.25	.19	~~.06~~	-.21	-.11[a]	.12[b]	-									2.84	0.74	.82
8	Intellect_IPIP	.33	.50	.37	-.15	-.13[b]	.20	~~.03~~	-								3.90	0.53	.76
9	Agreeableness_IPIP	~~.05~~	.09[a]	.27	-.20	-.14	.34	~~.02~~	.35	-							4.16	0.57	.80
10	Extraversion_IPIP	.39	.27	.27	-.22	-.23	~~.08~~	.01[a]	.48	.24	-						3.42	0.71	.83
11	RTC	-.12[b]	~~.04~~	-.11[b]	.19	.15	~~.05~~	-.14[b]	-.17	-.17	-.26	-					3.05	0.58	.80
12	Routine Seeking	-.14	-.15	-.19	.21	.15	-.11[a]	~~.05~~	-.26	-.26	-.28	.72	-				2.50	0.71	.71
13	Emotional Reaction	-.15	-.10[a]	-.10[a]	.14	.17	.09[a]	-.26	~~.08~~	~~.02~~	-.18	.71	.36	-			3.49	0.88	.70
14	Short-term Focus	-.24	-.14	-.15	.18	.18	~~.09~~	-.21	-.22	-.18	-.27	.74	.45	.52	-		2.83	0.86	.75
15	Cognitive Rigidity	-.17	.25	.11[a]	~~.00~~	~~-.06~~	.20	.12[b]	~~.07~~	~~-.02~~	~~.00~~	.54	.17	.10[a]	.09[a]	-	3.50	1.01	.79

LOC: Multidimensional Locus of Control, IPIP: International Personality Item Pool, RTC: Resistance to Change

All values were <0.001, unless otherwise indicated: a: p-value < 0.01, b: p-value < 0.05.

Correlations larger than .05 are striked-through.